

## **REMARKS**

The various objections and rejections made by the Examiner as noted above will be addressed individually herein below.

### **THE 35 USC 101 REJECTION**

All of the claims in this application have been rejected on the grounds that they claim the same invention as that claimed in co-pending USSN 10/076,669. The aforesaid co-pending application has been expressly abandoned in favor of the instant application, thus rendering this rejection moot.

### **THE OBJECTION TO CLAIM 3**

Claim 3 has been amended so as to correct the noted misspelling, thereby rendering the objection to this claim moot.

### **THE OBJECTION TO THE ABSTRACT**

The abstract has been objected to for the reason that it is greater than 150 words. The abstract has been amended so as to render this objection moot.

### **THE PROVISIONAL DOUBLE PATENTING REJECTIONS**

Claims 1, 2, 4-8 and 21-23 have been provisionally rejected under the judicially created doctrine of obviousness-type double patenting over the subject matter of Claims 1-3 of U.S. Patent No. 6,454,935, which is a patent that has issued from the parent application of the instant application. This rejection is a provisional rejection, and it will be addressed if and when any claims in the instant application are indicated as being allowed. At the present time, applicants do not see any problem with the filing of a terminal disclaimer in the instant application if necessary to overcome this rejection.

Claims 1, 2, 4-11 and 20-25 have been provisionally rejected under the judicially created doctrine of obviousness-type double patenting over the subject matter of Claims 1-18 of co-pending applications Nos. 09/512,035 and 10/076,670. The continuing application that the Examiner has cited as USSN 09/512,035 does not exist. The USPTO has conceded that said CPA application was never filed and has granted a refund of the filing fees for said application. Enclosed is a copy of a Decision Granting Request for Refund relating to said application. Thus this provisional double patenting rejection has been rendered moot. The second application USSN 10/076,670 referenced by the Examiner does exist. This rejection is, however, a provisional rejection, and it will be addressed if and when any claims in the instant application or the referenced application, are indicated as being allowed. At the present time, applicants do not see any problem with the filing of a terminal disclaimer in the instant application if necessary to overcome this rejection.

Now, we will address the prior art rejections.

### **THE REJECTION OF CLAIMS 1-8 AND 20-25**

The aforesaid claims have been rejected as being obvious over Setzer et al.

In Setzer et al, the desulfurization process is carried out at temperatures in the range of about 500° to 900°F (Col. 3, line 2); and the desulfurized fuel must have a sulfur content of less than about 20 ppm (Col. 3, line 16), since a sulfur content in the desulfurizer bed which above that level indicates that the bed is not functioning properly. .

As noted on page 3 of the office action, there are "Several differences" between the applicants' claimed invention and the contents of the Setzer et al reference.

With respect to Claims 1-8 and 22, 23, and 25, since the operating temperature range is not specified, there is actually only one difference and that difference is the allowable sulfur content of the desulfurizing bed effluent, which in Setzer et al is anything under 20 ppm and in the instant application is less than 0.05 ppm. Thus the arguments provided by the Examiner regarding the obviousness of the 300°F to 450°F temperature operating range are really irrelevant with respect to the subject matter of Claims 1-8, 22, 23 and 25.

Claims 1-8 and 20-25 of the instant application require that the effluent fuel stream exiting the desulfurization bed contain no more than about 0.05 ppm sulfur. The Examiner has focused on the use of the term "trace" in the Setzer et al patent, and has alleged that "It would have been obvious to one of ordinary skill in the art at the time the invention was made to desulfurize the Setzer et al +++ fuel to any degree required to produce a suitable fuel cell feed, including applicant's' less than 0.05 ppm sulfur +++". (emphasis added). In Setzer et al, it is clearly suggested that a "trace" amount of sulfur is less than 20 ppm. Thus, 19 ppm is a "trace" amount of sulfur as far as Setzer et al is concerned. The Examiner has suggested that one skilled in the art would be able to use the teachings of Setzer et al to achieve an effluent having less than 0.05 ppm sulfur, or in fact any "desired level" which is less than 20 ppm. Thus, following the Examiner's line of reasoning, one skilled in the art could use the teachings of Setzer et al to achieve an effluent having, say, 0.000001 ppm sulfur, since this amount is less than 20 ppm. While making this bold allegation, the Examiner has not pointed out which parameters in Setzer et al would have to be manipulated in order to achieve an effluent having less than 0.05 ppm sulfur. The Examiner is reminded that the rejection of Claims 1-8 and 20-25 is based solely on the contents of the Setzer et al reference, and on nothing else. In order to discharge her burden of proof, the Examiner should present a cogent analysis of the Setzer et al reference pointing out

what parameters would be varied by one skilled in the art to achieve the claimed less than 0.05 ppm sulfur content effluent. For example, would one increase (or decrease) the amount of water suggested by Setzer et al; or would one increase (or decrease) the operating temperatures of the desulfurizer? The Examiner must also point out where in the Setzer et al reference she finds these clues as to how to achieve the claimed less than 0.05 ppm sulfur levels.

On page 10 of the office action, the Examiner states that: "The reference's (Setzer et al) disclosure of 'amounts below those amounts detectable' suggests a low amount which may encompass applicants' 0.05 ppm." (emphasis added). For one thing, the use of the phrase "amounts below those amounts detectable" describes undetectable amounts of sulfur in the effluent stream prior to breakthrough, which occurs at 20 ppm. This indicates that amounts of sulfur below 20 ppm are amounts which are not detectable by the Setzer et al system. This indicates that the sulfur detector can only detect amounts of sulfur in the effluent which are greater than 20 ppm. This, in turn, indicates that the detector in Setzer et al would not be able to detect amounts of sulfur between 0.05 ppm and 20 ppm. Furthermore, the fact that a result which "may" be achievable, in the Examiner's opinion, does not render the achievement of such a "may be" result obvious. The mere fact that prior art may be modified does not make the modification obvious unless the prior art suggested the desirability of the modification. See: In re Gordon, 221 USPQ 1125 (CAFC 1984); In re Grabiak, 226 USPQ 870 (CAFC 1985); and In re Sernaker, 217 USPQ 1 (CAFC 1983).

The Examiner will note that we have ignored her arguments in support of the rejections of Claims 1-8, 22, 23 and 25 which relate to operating temperatures since the claims in question (1-8, 22, 23 and 25) do not recite any operating temperature ranges.

Claims 20, 21 and 24 require that the desulfurizer station be maintained at a temperature in the range of about 300°F to about 450°F. The Examiner alleges that a temperature range of 500°F-900°F (Setzer et al) is close enough to a temperature range of 300°F to 450°F (this application) to convey to one of ordinary skill in the art an expectation that the Setzer et al process would work at the lower temperatures claimed in the instant application.

The Examiner alleges that a temperature range of 500°F-900°F (Setzer et al) is close enough to a temperature range of 300°F to 450°F (this application) to convey to one of ordinary skill in the art an expectation that the Setzer et al process would work at the lower temperatures claimed in the instant application. In support of her position, the Examiner states that the 500°F to 900°F operating temperature range specified in Setzer et al '746 is

"only a preferred embodiment", citing Col.1, lines 67 and 68 of the patent. As a matter of fact, the 500°F to 900°F operating range is the only operating range disclosed in Setzer et al '746. The Examiner characterizes the temperature range disclosure of Setzer et al '746 as a "broad" disclosure which merely requires an "elevated" temperature. With all due respect, if Applicants in this application were claiming merely "an elevated temperature", the Examiner would rightfully require a specific range, and would object to the vague recitation of "an elevated temperature".

In Setzer et al '746 "breakthrough" is a condition which is not desirable. It, in fact, denotes failure of the sulfur removal bed, as far as Setzer et al '746 is concerned. It is thus elementary that postponement of breakthrough is most desirable. FIG. 2 in Setzer et al '746 provides clues as to the relationship between the time to reach breakthrough (in hours) and the operating temperature (in degrees F) of the desulfurizing bed. FIG. 2 indicates that breakthrough will occur after about 9 hours from start up at an operating temperature of 500°F, and the longest breakthrough time (about 16 hours) will occur at an operating temperature of about 600°F. FIG. 2 also indicates that the breakthrough time decays at temperatures between 600°F and 900°F. FIG. 2 indicates that breakthrough times at 900°F and 500°F are about the same, i.e., about 9 to 10 hours. The Examiner has alleged that the claimed temperature range of 300°F to 450°F is "close enough" to the prior art temperature range of 500°F to 900°F so that one of skill in the art would have expected "the same properties".

The Examiner has not bothered to define what she means by "the same properties", thus we are left in the dark as to what she is talking about. In the rejection, the Examiner implies that Applicants must demonstrate that the 450°F upper limit of the claimed temperature range shows something "unexpected". There is no requirement for anything "unexpected" in Title 35 of the patent statute. Kansas Jack, Inc. v Kuhn et al 219 USPQ 857 (CAFC 1983). With all due respect, the Examiner would be well advised to forget about "unexpected results" when formulating §103 rejections. A §103 rejection requires that the modification be obvious in view of the prior art. A modification is "obvious" if the prior art provides some motivation to incorporate the modification, or some indication that the modification would be desirable. The Examiner has the burden of proof to point out where that motivation or desirability is provided in the prior art. In Ex parte Levy, 17 USPQ2d 1461 (US PTO Bd. Pat. App. & Int. 1990), the Board held that the initial burden of establishing a *prima facie* basis to deny patentability rests upon the examiner. See also In re Carleton, 202 USPQ 165 (CCPA 1979); and In re Piasecki, 223 USPQ 785 (Fed. Cir. 1984). This burden can only be discharged by establishing a factual basis for the finding of

non-patentability. Examiner's conjecture or conclusionary assertions do not provide the necessary factual basis.

The Examiner has necessarily alleged that the upper end of the claimed temperature range (450°F) is close enough to the lower end of the prior art temperature range (500°F) so that one of ordinary skill in the art would be motivated by the prior art, or would believe that the claimed 450°F temperature would be desirable to use in the performance of the prior art Setzer et al procedure. We interpret the Examiner's position as alleging that the use of a 450°F operating temperature in the Setzer et al '745 procedure would be desirable and should be used. Looking at FIG. 2 of Setzer et al '745 we note that the graph indicates that there is a linear decrement in the breakthrough time between the operating temperatures of 600°F and 900°F, and that the use of temperatures which are greater than 600°F are more desirable than the temperature of 500°F. Operating temperatures below 500°F, if extrapolated from FIG. 2, would provide a breakthrough time which appears to decline logarithmically, and which appears to be at zero hours before reaching an operating temperature of 450°F. Thus the only correlation between operating temperatures and the achievement of breakthrough shown in Setzer et al '745 is shown in FIG. 2 and indicates that it would not be desirable to utilize an operating temperature which is below 500°F.

Setzer et al '745 thus does not suggest that an operating temperature of less than 500°F would be desirable, or even operable.

Thus the teachings of Setzer et al '745 would not "motivate" one skilled in the art to utilize an operating temperature which is included in the range of temperatures that are recited in Claims 20, 21 and 24 of the instant application, irregardless of how "close" the upper end of the range of the claimed operating temperatures is to the lower end of the range of operating temperatures set forth in the prior art.

Stated more succinctly, in the instant case, "close enough" is not good enough. If the Examiner can present a well reasoned argument as to why "close enough" is good enough, then we would like to consider it.

B) Claims 9-11 stand rejected as being obvious over Setzer et al '746 in view of Alexander et al.

The flaws in the Examiner's analysis of Setzer et al '746 relating to the sulfur content of the desulfurizing bed effluent, and the desulfurizing bed operating temperatures are noted

above, and are reiterated in connection with this rejection.

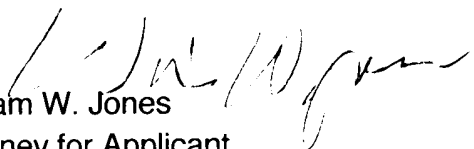
Alexander et al is relied upon by the Examiner for a showing that "conventional gasoline marketed in large metropolitan areas contains oxygenates including methanol, ethanol and MTBE. See column 1, lines 1-25." What the Examiner is ignoring is the contents of the third full paragraph in Col. 1 (lines 26-33) of Alexander et al wherein the patent notes that there are many problems associated with the use of methanol and ethanol as a gasoline additive, and therefore the industry would not suggest the use of either of these two additives in gasoline. This patent thus teaches away from the use of ethanol and/or methanol as an additive in gasoline. Additionally, the use of MTBE as a gasoline additive has recently come under attack since there is evidence that MTBE is a cancer-causing agent. MTBE in gasoline has or will be banned in California, and will be banned in Connecticut and elsewhere, in the near future. We are sure that the Examiner must also be aware that there are gasolines that do not include MTBE, or any other oxygenates, presently in use in the United States. Thus, there are presently gasolines which include MTBE, and gasolines which do not include MTBE or any other oxygenates. This being the case, the Examiner has the burden of proof in showing that one desiring to desulfurize a gasoline or diesel fuel stock would be motivated to use a fuel stock which includes an oxygenate.

Regarding the specific subject matter of Claims 10-12, these claims all require a desulfurized fuel stream which contains no more than about 0.05 ppm sulfur. Alexander et al does not enable the achievement of such a result. Regarding Claims 10-12, these claims all require that the oxygenate be converted to another compound by the nickel reactant bed. Neither Setzer et al nor Alexander et al suggest the desirability of using a nickel reactant bed to convert an oxygenate to another compound.

The prior art-based §103 rejections should therefore be reconsidered and withdrawn.

It is respectfully submitted that the several rejections and objections to the specification and claims of the instant application have been either rendered moot, or adequately traversed, and that this application is presently in condition for allowance. Early notice to that effect is courteously requested.

Respectfully submitted,

  
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